

P-2.6 Apply formulas for velocity and acceleration to solve problems related to projectile motion.

Revised Taxonomy Level **3.2 C_A** **Apply (implement) procedural knowledge**
Key Concepts

Physical science students did not address projectile motion

As Physics for the Technology classes and traditional college prep classes will have different curricula based on the choices that are made for standards six through ten, the scope of the core curriculum should vary as well. The emphasis of topics within the core standards will depend on subsequent topics to be addressed.

It is essential for all physics students to

- ❖ Apply all of the concepts and formulas used to analyze accelerated motion to objects in free fall and projectiles.
 - Solve problems involving falling objects, or objects projected upward
 - ◆ $a_g = (v_f - v_i)/t$
 - ◆ $d = (v_{ave}) t$
 - ◆ $v_{ave} = (v_i + v_f)/2$
 - Solve problems involving the upward vertical motion of a projectile and the downward vertical motion of a projectile
 - ◆ $a_g = (v_f - v_i)/t$
 - ◆ $d = (v_{ave}) t$
 - ◆ $v_{ave} = (v_i + v_f)/2$
 - Solve problems involving the horizontal motion of a projectile
 - ◆ $v = d/t$
 - Graph the vertical and the horizontal motion of falling objects and trajectories

College prep differentiation

- ❖ Use vector analysis to determine the vertical and horizontal components of the initial velocity of a projectile.

Assessment

As the verb for this indicator is implement (use), the major focus of assessment will be for students to show that they can “apply a procedure to an unfamiliar task”. The knowledge dimension of the indicator, procedural knowledge means “knowledge of subject-specific techniques and methods” In this case the procedure is the application of the equation for constant velocity and the equations which apply to accelerated motion. The unfamiliar task should be a novel word problem or laboratory investigation. A key part of the assessment will be for students to show that they can apply the knowledge to a new situation, not just repeat problems which are familiar. This requires that students have a conceptual understanding of each of the variables as well as mastery of the skills required to implement the mathematical equation or in order to solve the problem.